REMARKS

This communication is in response to the Office Action mailed on September 7, 2006. In the Office Action, claims 1, 2, 6, 7, 10, 13-29, 33-39 and 43-47 were pending.

Claims 1, 25 and 35 were objected to because wherein clauses were not appropriately listed. As required by the Office Action, Applicant has placed semicolons in these claims to remove this objection. Additionally, claim 46 was objected to for containing "liner", instead of the word "linear". Applicant has amended claim 46 to recite the word "linear". Thus, withdrawal of the claim objections is requested.

The Office Action reports that claims 6, 33 and 40 were rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter for which the Applicant regards as the invention. In particular, claims 6, 33 and 40 were dependent upon a cancelled claim. Applicants have amended these claims in order to correct their dependencies. As such, claims 6, 33 and 40 are believed to meet the requirements of 35 U.S.C. § 112, second paragraph, and withdrawal of this rejection is requested.

Claims 1-2, 7, 24-25 and 35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Pighin et al. ("Synthesizing Realistic Facial Expressions from Photographs") in view of Simon et al. (U.S. Patent Application 2003/0223622) and Lanitis et al. ("Automatic interpretation and coding of face images using flexible models"). Of these claims, claims 1, 25 and 35 are independent. These claims have been amended to clarify the subject matter recited therein. As a result, it is believed that these claims are allowable over the prior art.

Amended independent claim 1 recites a computer-implemented method for rendering a single frame of a synthesized image. The method includes generating a geometric component corresponding to a selected image for the frame based on

identified feature points from a set of representative images. Each image of the set has the identified feature points. Also, the geometric component is a dimensional vector of feature point positions. The method also includes generating the selected image for the frame from a composite of the set of representative images based on the geometric component. The selected image and each of the set of representative images includes a plurality of subregions defined adjacent to each other. Adjacent subregions share a common boundary. A geometric component is generated for each subregion and the composite of the set of representative images is based on the corresponding geometric component for each subregion. The selected image includes a synthesized subregion for each subregion based on the composite and is rendered by blending at least some boundaries between adjacent subregions in the selected image without discontinuities in texture in order to generate the selected image.

Amended independent claim 25 recites a computer-implemented method of rendering a single frame of a synthesized image based on feature points. The method includes accessing a set of stored representatives of various images. Each image of the set of the images has the same corresponding feature points associated therewith. A position of at least one feature point is ascertained from a change in position of another feature point based on a change in movement of the selected feature point and based on the set of stored representatives of various images. A new image for the frame is rendered with two or more feature points having changed position. The new image and each image in the set of stored representatives of various images includes a plurality of subregions defined adjacent to each other. Adjacent subregions share a common boundary. The step of rendering also includes rendering the new image with a synthesized subregion for each subregion by blending at least some boundaries between adjacent subregions in the new image. Blending occurs along

boundaries without discontinuities in texture to generate the new image.

As amended, independent claim 35 recites a computer-implemented method for rendering a single frame of a synthesized facial image based on feature points. A facial image is rendered with identified feature points and information indicative of a user moving a selected feature point is received. A set of stored representatives of various facial images is accessed. Each image of the set of stored images has a same corresponding feature points associated therewith. A position of at least one feature point from a change in position of another feature point is ascertained based on a change of movement of the selected feature point and based on the set of stored representatives of various facial images. A new facial image for the frame is rendered with two or more feature points having changed position. The new image in each facial image in the set of stored representatives are various facial images includes a plurality of subregions adjacent to each other. Adjacent subregions share a common boundary. A synthesized subregion is rendered for each subregion in the new image by blending at least some boundaries between adjacent subregions in the new image without discontinuities in texture in order to generate the new image.

Pighin et al. describe techniques for synthesizing realistic facial expressions from photographs. For example, a surprised expression image and a sad expression image can be combined to produce a worried expression image. Additionally, Pighin et al. describe blending of texture values from different photographs. This blending is based on separate images and does not teach or suggest the blending recited in claims 1, 25 and 35. In these claims, blending is provided for the image for boundaries without discontinuities in texture. Thus, the Office Action has failed to present objective evidence of blending boundaries for the image without discontinuities therebetween.

Similarly, Simon et al. describe blending of separate images, but do not teach or suggest blending regions that share a common boundary and that do not have discontinuities in texture. Simon et al. merely discuss enhancing a facial image and do not discuss blending regions without discontinuities in texture. Instead, a broad meaning is implied from blending discussed in Pighin et al. and Simon et al. Clearly, there is simply no objective evidence that describes blending of two adjacent regions without discontinuities in texture, for example a skin region sharing a boundary with another skin region. These blending techniques discussed are clearly not provided for blending between adjacent subregions that share a common boundary and that are without discontinuities in texture. Thus, ~~independent claims 1, 25 and 35 are believed to be allowable.~~

Claims 6, 10, 13-14, 26 and 36 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Pighin et al. in view of Simon and further in view of Cosatto et al. ("Photrealistic Talking Heads from Image Samples"). Additionally, claims 15-23, 27-29, 33-34, 37-39 and 43 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Pighin et al., Simon and Cosatto et al. and further in view of Chai et al. ("Vision-based control of 3D animation"). Claims 44 and 47 were rejected under 35 U.S.C. §103(a) as being unpatentable over Pighin et al. and Simon and further in view of Nielsen (U.S. Patent No. 6,591,011). Also, claim 45 was rejected under 35 U.S.C. §103(a) as being unpatentable over Pighin et al. and Simon and further in view of Stewart et al. (U.S. Patent Application 2003/0190091) and claim 46 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Pighin et al., Simon and Stewart et al. and further in view of Fogel et al. (U.S. Patent No. 5,991,459). These claims are believed to be separately patentable when combined with their respective independent claims. As such, these claims are believed to be allowable.

Claims 1, 25 and 35 were also rejected under 35 U.S.C. § 103(a) as being unpatentable over Pighin et al. in view of Rowe et al. (U.S. Patent Application 2003/0202686). Rowe et al. simply does not provide blending along boundaries of adjacent subregions that do not have discontinuities in texture. While Rowe et al. discuss triangulation, there is no teaching or suggestion of blending between subregions as claimed. As a result, independent claims 1, 25 and 35 are believed to be allowable over the combination of Pighin et al. and Rowe et al.

Applicants further note that Nielsen is further silent with respect to blending between adjacent subregions without discontinuities in texture. Thus, the pending claims appear to be allowable over Nielsen.

In view of the foregoing, Applicant's submit that the present Application is in condition for allowance. Favorable action is requested.

The Director is authorized to charge any fee deficiency required by this paper or credit any overpayment to Deposit Account No. 23-1123.

Respectfully submitted,

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